ENGELMANN SPRUCE BEETLE CONDITIONS
DIXIE NATIONAL FOREST
APPRAISAL SURVEY

By

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INTRODUCTION

The Engelmann spruce beetle stands on the Aquarias plateau and Boulder Mountain in southern Utah have a long history of Engelmann spruce beetle attacks. One of the most disastrous outbreaks occurred between 1918 and 1928. This outbreak killed nearly 100 percent of the mature spruce on the north end of the mountain and covered an area of approximately 50 square miles. Periodically, since 1926, small isolated outbreaks have developed; the most recent occurring in 1952 as a result of a heavily concentrated blowdown. This outbreak was successfully controlled by the use of toxic chemicals with a minimum loss of standing timber. In 1955 a road was built up the south end of the plateau to make the mature spruce around Griffin Springs area accessible for logging. Logging has been in progress since that time and, as would be expected, the Engelmann spruce beetle increased in numbers in the logging slash and stumps. Observations have been made annually to watch the development of Engelmann spruce beetle. Until this year, there has always been sufficient new logging debris laid down in the immediate vicinity to absorb the beetle population. However, in July the detection team of the Division of Forest Insect Research discovered a number of standing infested trees adjoining one of the older sale areas. The Griffin Springs area also contains a heavy infestation of spruce mealybugs.

SURVEY METHODS

An estimate was obtained by starting in the center and working in all directions to the outer edge of the infestation. Additional scouting was done beyond the survey area to insure that no infested trees were present outside of the infestation boundary. Information was also gathered on the probable cause of the buildup, severity of attack, bark beetle development, and evidence of natural control factors.

RESULTS

It was determined that the infestation covers about 700 acres located in secs. 26 and 27, T. 33 S., R. 1 W., just south of Griffin Springs. The infestation consists of about 1,000 standing infested spruce trees. The

infested trees are located mainly in the "leave" blocks of mature spruce adjoining the old cut blocks. In all probability the spruce beetle populations developed in the logging slash and stumps as well as in an occasional blowdown. The occurrence of blowdown, however, was very light and probably did not contribute materially to the buildup of beetles. No recent cutting operations have been conducted in the immediate vicinity. Biologically, the examination showed the following:

1. The standing infested trees are made up almost entirely of new attacks.

2. The egg galleries at the time of the observation averaged 4-5 inches in length.

3. Egg deposition was heavy.

4. Some new attacks were still occurring.

5. Practically no standing trees were attacked in the last 2 years.

6. A low incidence of insect predators and parasites was noted.

7. Woodpecker activity was classified as light for the total infested area, with the woodpeckers showing a decided preference for certain trees.

8. The Engelmann spruce beetle can and will successfully attack spruce heavily infested with the spruce mealybug.

DISCUSSION AND RECOMMENDATIONS

The marking and removing of timber in the Griffin Springs area has been satisfactory from the standpoint of minimizing blowdown and thus reducing the possibility of rapid bark beetle buildup. In general, the cutting practices were such that sufficient logging debris was laid down in a manner to absorb the beetle produced the previous year. However, the present infestation points out that extreme care must be exercised to insure that sufficient logging debris is laid down to absorb the beetle. When cutting ceases some treatment resulting in destruction of brood in slash and stumps may be indicated. This can be accomplished by the use of loggable trap trees or the application of toxic chemicals to the infested material, or burning.

The lack of insect predators and parasites and the relatively light woodpecker population, coupled with the heavy brood potential indicates that unless control measures are undertaken this infestation will continue to enlarge and spread. Therefore, some control action should be

undertaken unless the loss of a considerable amount of mature spruce can be tolerated. The reduction of the bark beetle population can best be accomplished by the removal, through logging, of infested trees or the application of toxic chemicals. If the application of toxic chemicals is the method decided upon, the Division of Forest Insect Research will be glad to furnish technical information on the formulations to use and control techniques to be employed.